Work Order ID 90674

September-21-12 11:31:26 AM

90674

Revision ID: Item Name: Cross		•		*1* *1*	Accept		OOAC)1) () *	Setup Sta	1/1	S1* S2*
	cess Plan	MLJ		: 12-09-			Date:		F	Run Stai Stoj	1/1	R1* R2*
Sequence ID/ Work Center ID		Operation Description	<u></u>	· <u></u>	Set Up/ Run Hours	Tool	ID Tool#	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revisi	on Nbr							_ `			
D350-748-241	F	,							<i>.</i>			100
100		400			0.00				- 		· -	
100 Mori Seiki	N	MORI SEIKI CNC L Memo	ATHE LARG	E	. 0.00				·			·
Mori Seiki CNC Lathe Larg	je .	1-Fill tu	be with sand &	t install plugs o	n both ends as per Folio F	A647			'			mand
		3- File tr FOLIO F		Folio FA647 smooth.	•		 -	•	*	×		12/09/27
•		DWG R	EV:			•	,	* ***	•	NOT.		, · ·
110	Ç	C1- Inspect dimens	ions to dimens	sion sheet	. 0.00		•	ан. 4 4			•	
*11 0 *	•	Memo			0.00					-P	,	·
Quality Control			,						(,	mand
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NCR:	Yes	/	No
IVCIV.	103	,	110

WORK ORDER NON-CONFORMANCE / UPDATE

1 1	as K	,
DQA Date: 12/12/13	3	
DQA(11) L Date: 14/2/13		
	,A::	

QA Closed: CA AGAINST DEPARTMENT/PROCESS DISPOSITION Work Order: Crosstube / Water Jet Engineering Rework Skid-tube Quality Machining Small Fab Prod. Eng. Coor. Scrap Rec/Store/Packaging Other Use-as-is **⊀** Thermoforming Finishing Work Order Update Supplier NCR No.. Large Fab Composite Description of work order update Action Sign & Initial Root Date Verification QC Inspector or Non-conformance Chief Eng Description Cause Date Step Qty Ultrasound over tolerance in 2 places. fol 0.030 Measured 0.034/0.032 Doc/Data 12/16/2 12-10-3 100 12/10/2 Equip/Tooling Operator Material 17/12/07 Setup Other Process Supplier Training Unapproved **FAULT CATEGORY Landing Gear** General Pressure/Forced Bending Bend Grain Ovalized BOM/Route Over/Under tolerance Temperature/Cure Centre Not Concentric to O/S Hardware Weld Broken/Damaged Part Incorrect Cracks Inspection Incomplete Wrong Stock Pulled Instructions Incomplete/Unclear Part Lost/Missing Crushed/Crimped. Burrs Maintenance Part Moved Cuffs Contamination **Heat Treat** Countersink Mislabeled Positioned Wrong Other Power Loss/Surge Inspection Strip in Tube Cut Too Short Misread Offset **Drill Holes** Ripples in Bend **Torque Waves in Extrusion** Drawing Out of Calibration **Turning Sequence Finish** Out of Sequence

Outside Dimensions

Wave/Twist in Tube

Folio

September-21-12 11:31:26 AM

90674

Page 2

D350-748-241TRN Item ID: Accept *N900040100* Setup Start **Revision ID:** Item Name: Crosstube Turning Detail **Start Date:** 21/09/2012 Start Qty: 1.00 **Cust Item ID: Required Date:** 05/10/2012 Req'd Qty: 1.00 Customer: Reference: Run Start Approvals: **Process Plan:** Date: Tooling: Date: Stop QC: Date: SPC (Y/N): Date: Sequence ID/ Operation Tool ID Set Up/ Tool # Plan Accept Reject Reject Insp. **Work Center ID** Description **Run Hours** Qty Code Qty Number Stamp 120 0.00 MORI SEIKI CNC LATHE LARGE *120* Mori Seiki 0.00 Memo man.l 12/09/28 Mori Seiki CNC Lathe Large 1-Turn second side as per Folio FA647 2- File transition lines smooth. 3-Scribe part # as per Dwg D350-748-241 FOLIO REV: DWG REV: 130 QC1- Inspect dimensions to dimension sheet 0.00 *130* 2/01/28 12-10-3 OC 0.00 Memo Quality Control 140 QC8- Inspect parts - second check 0.00 QC 0.00 Memo Quality Control

											DQA:	Date	:
NCR:	Yes /	No				WORK ORDER NON-	-co	NFOR	MANCE / UP	DATE			1
											QA Closed:	Date	:
Marile Ord						DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	
Work Ord	er					Rework]	Skid-tube	Crosstube	7	Water Jet	Engineering
Part f	No.					Scrap			Machining	Small Fab	Pro	d. Eng. Coor.	Quality
raici	.					Use-as-is	\dashv		noforming	Finishing	→	re/Packaging	Other
NCR I	No.					Work Order Update	-		Large Fab	Composite	1	Supplier	
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Root					Descrip	otion of work order update		Initial	Ac	tion	Sign &		
Cause	Da	te St	ер	Qty	0	r Non-conformance	Ct	nief Eng	Desc	ription	Date	Verification	QC Inspector
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	Cuffs					Contamination		Mainte			Part Moved		
	Heat	Treat				Countersink		Mislabe	led		Positioned V		_
	Inspe	ction Stri	p in T	ube		Cut Too Short		Misread			Power Loss/	Surge	Other
	Ripple	es in Bend	d			Drill Holes	1	Offset					

Out of Calibration

Outside Dimensions

Out of Sequence

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

Folio

September-21-12 11:31:26 AM Item ID: D350-748-241TRN Accept *N900040100* Setup Start **Revision ID:** Item Name: Crosstube Turning Detail **Start Date:** 21/09/2012 Start Qty: 1.00 **Cust Item ID: Required Date:** 05/10/2012 **Req'd Qty:** 1.00 **Customer:** Reference: Run Start **Approvals: Process Plan:** Date: Tooling: Date: Stop Date: SPC (Y/N): Date: Sequence ID/ Operation Set Up/ Tool ID Tool # Plan Reject Accept Reject Insp. **Work Center ID** Description **Run Hours** Code Qty Otv Number Stamp 150 0.00 Large Fab *150* Crosstubes 0.00 Memo 12-10-13 1-DRILL HOLES FOR HEAT TREAT USING DT9806(HOLES MUST BE Crosstubes ALIGNED ON SAME LINE ON BOTH CUFFS) 12-10-3 2-Grind machining marks 160 Outsource process - Heat Treat 0.00 CX 12/10/050 *160* Outsource1 0.00 Memo Outsource process - Heat Treat Issue P/O: Heat Treat to min 180 KSI As per Dwg D350-748-241 Sand Blast tube after Heat Treat Possibe Supplier: Vac Aero Ensure Certificate of Conformity is attached 170 Receive & Inspect for Damage & Mat'l Certs 0.00 *170* Packaging 0.00 Memo Packaging Ensure certificate of conformaty is attached

								DQA:	Date:	,
NCR: Ye	es / No			WORK ORDER NON-O	CONFOR	RMANCE / UF	PDATE			ф ·
								QA Closed:	Date:	
Work Order				DISPOSITION			AGAINST DE	PARTMENT	/PROCESS	
Work Order	-			Rework	1	Skid-tube	Crosstube]	Water Jet	Engineering
Part No) .			Scrap	1	Machining Small Fab			d. Eng. Coor.	Quality
				Use-as-is	The	moforming	Finishing	Rec/Sto	re/Packaging	Other
NCR No	D			Work Order Update]	Large Fab	Composite]	Supplier	
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Cause	Date	Step	Qty	or Non-conformance	Chief En	g Des	cription	Date	Verification	QC Inspector
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Landing	g Gear	-		General				7	. —	
	Bending	•		Bend	Grain			Ovalized		Pressure/Forced

Hardware

Maintenance

Out of Calibration

Outside Dimensions

Out of Sequence

Mislabeled

Misread

Offset

Inspection Incomplete

Instructions Incomplete/Unclear

Temperature/Cure

Wrong Stock Pulled

Weld

Other

Over/Under tolerance

Part Incorrect

Part Moved

Part Lost/Missing

Positioned Wrong

Power Loss/Surge

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Ripples in Bend

Turning Sequence

Wave/Twist in Tube

Bending

Cracks

Cuffs

Heat Treat

Crushed/Crimped.

Inspection Strip in Tube

Torque Waves in Extrusion

Centre Not Concentric to O/S

Burrs

BOM/Route

Contamination

Countersink

Cut Too Short

Drill Holes

Drawing

Finish

Folio

Broken/Damaged

90674

September-21-12 11:31:26 AM Item ID: D350-748-241TRN Accept *N900040100* Setup Start **Revision ID:** Item Name: Crosstube Turning Detail *1* **Start Date:** 21/09/2012 Start Oty: 1.00 **Cust Item ID: Required Date:** 05/10/2012 **Req'd Qty:** 1.00 **Customer:** Reference: Run Start Approvals: **Process Plan:** Date: Tooling: Date: QC: Date: SPC (Y/N): Date: Sequence ID/ Operation Set Up/ **Tool ID** Tool # Plan Reject Accept Reject Insp. Work Center ID **Description Run Hours** Qty Code Qty Number Stamp 180 QC6- Inspect dimensions to drawing *180* QC Memo Quality Control 190 0.00 Packaging *190* SAD DIDOY Packaging 0.00 Memo Packaging Identify and stock in kanban rack Location: \angle (5 200 QC21- Final Inspection - Work Order Release 0.00 0.00 Memo Quality Control

> MF 12-12-04

NCR:	Yes	/ No				WORK ORDER NON-	CON	IFORN	MANCE / UPI	DATE			N:
			v. 100 00000							•	QA Closed:	Date	:
Work Ord	er:					DISPOSITION				AGAINST DE	PARTMENT	PROCESS	
						Rework	7		Skid-tube	Crosstube		Water Jet	Engineering
Part f	No.					Scrap		ſ	Machining	Small Fab	Pro	d. Eng. Coor.	Quality
*						Use-as-is	1	Therm	noforming	Finishing	Rec/Stor	e/Packaging	Other
NCR I	No.					Work Order Update]		Large Fab	Composite]	Supplier	
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		Cracks	1			Broken/Damaged		Inspecti	on Incomplete		Part Incorred	ct _	Weld
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		Cuffs				Contamination		Mainte	nance		Part Moved		
		Heat Trea	t			Countersink		Mislabe	led		Positioned V	Vrong	_
		Inspection	Strip in	Tube		Cut Too Short	П	Misreac	I		Power Loss/	Surge	Other
		Ripples in	Bend			Drill Holes	П	Offset			_		
		Torque W	aves in E	xtrusion	·	Drawing		Out of C	Calibration				
		Turning Se	equence			Finish		Out of S	equence				
		Wave/Twi		e		Folio		Outside	Dimensions				

DQA:

Date:

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Picklist Print

September-21-12 11:31:29 AM

Work Order ID: 90674

D350-748-241TRN

Parent Item Name: Crosstube Turning Detail

90674

D350-748-241TRN

Start Date: 21/09/2012

Required Date: 05/10/2012

Start Qty: 1.00

Required Qty: 1.00

Page 1

Comments:

Parent Item:

IPP Rev:A New Issue 08-03-06 DD verified by:ec

IPP Rev B Removed polish 08.04.02 EC verified by: DD

IPP Rev C Removed LPS-3 08.06.23 Ec verified by: DD IPP Rev D

11.02.24 as per dwg rev.F DD verf: JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Primary Item Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6015-125		Manufactured	No		120	Each	95.0000	1	1			=
D6015-10) た							**				

Crosstube Material

Location Loc Qty Loc Code HALL 95 4 21 70

NCR: Y	res / No				WORK ORDER NON-	CON	FORM	MANCE / UP	DATE			•
					•			·		QA Closed:	Date:	
Work Orde	er:				DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	· 🕏
Part N					Rework Scrap Use-as-is	- - - -	ſ	Skid-tube Machining	Crosstube Small Fab Finishing	4	Water Jet d. Eng. Coor. re/Packaging	Engineering Quality Other
NCR N	lo		· · · · · · · · · · · · · · · · · · ·		Work Order Update] [riiciii	Large Fab	Composite]	Supplier	
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	Wave/Tw	•			Folio	\Box	Outside	Dimensions				

Date:

DQA:

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	90671
Part Number:	D350-748-241
· , ·	Page 1 of 2
_	Part Number:

FIRST ARTICLE INSPECTION CHECKLIST

		7	VIICLE INSP		· OIILOI	VEIO I	í
lr Dr	nspection Sheet awing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
	2.240	+0.005/-0.000	2212	7		viero	cro6
	2.180	+0.005/-0.000	2.182	/		1	0000
	2.180	+0.005/-0.000	2 184	/			
	2.208	+0.005/-0.000	2.212	/			
	2.234	+0.005/-0.000	2.237	7		 	
	2.253	+0.005/-0.000	2.255				
ĒA	2.272	+0.005/-0.000	2.277				
SIDE	2.299	+0.005/-0.000	2.302			V	
	0.063	+/-0.010	,063			ren	curc-66
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	R0.063	+/-0.010	.063			RG	
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	2.180	+0.005/-0.000	2.18)			vern	CWC-06
-	2.180	+0.005/-0.000	2.184				
:	2.208	+0.005/-0.000	2212				
	2.234	+0.005/-0.000	7935	7			
1	2.253	+0.005/-0.000	5 7 6/				
В В	2.272	+0.005/-0.000	3 577		/		
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			•					-				QA Closed:	Date:	
Nork Ord	er:						DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	
							Rework			Skid-tube	Crosstube]	Water Jet	Engineering
Part	No.	u.					Scrap			Machining	Small Fab	-1	d. Eng. Coor.	Quality
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NCR	No.						Work Order Update	ا ا		Large Fab	Composite]	Supplier	
Root					Des	crip	otion of work order update		nitial	Act	tion	Sign &		
Cause		Date	Step	Qty			r Non-conformance	Ch	ief Eng	Desci	ription	Date	Verification	QC Inspector
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		Centre No	at Concer	ntric to (n/s		BOM/Route	<u> </u>	Hardwa	re		Over/Under	tolerance	Temperature/Cure
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	-	Heat Trea	ıt				Countersink		Mislabe			Positioned V	Vrong	
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Outside Dimensions

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Wave/Twist in Tube

Folio

DART AEROSPACE LTD

Work Order:

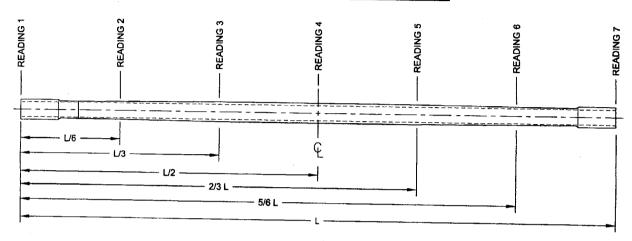
Obscription: Crosstube Assembly (AS350/355 High Aft)

Part Number:

D350-748-241

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WALL THICKNESS MEASUREMENT



	WALL	THICKNESS	MEASUREMEI	NT (IN)	Deviation	
Location	w1	w2	w3	w4	Δw (max-min)	TOLERANCE
READING 1 L= 0"	1/22	.129	124	.115	<0/01	
READING 2 L= [4	.105	114	.691	[.682]	-032	
READING 3	.132	.133	.129	126	-007	
READING 4	,149	.151	.156	.156	-007	0.030"
READING 5 L= 28	-117	-122	.147	.137	.075	
READING 6	.082	-090	.116	.1/6	-034	Jus= 0.099.
READING 7 L= CUPP	-115	.126	.134	-128	-019	

Calibration Result

Actual Block Thickness: .100 -900

Sitescan 250 Measured Thickness: -100 - 500

Measured by:		man, C	Audited by:	Preliminary Approval:	
	Date:	12/09/28	Date: 12-10-3	Date:	
Rev	Date	Change		Daving d by	
Α	07.01.17	New Issue	(P/O D350-748-201)	Revised by	Approved
В	12.02.02	Dwg Rev update		KJ/JLM	
С	12.06.04	Wall thickness for		KJ KJ	

									DQA:	Date:	
NCR: Ye	s / No				WORK ORDER NON-C	CONFORM	MANCE / UF	PDATE	QA Closed:	Date:	
Work Order:					DISPOSITION			AGAINST DE	PARTMENT/	PROCESS	
Part No					Rework Skid-tube Crosstube Machining Small Fab Thermoforming Finishing Work Order Update Large Fab Composite		Water Jet Prod. Eng. Coor. Rec/Store/Packaging Supplier		Engineering Quality Other		
Root				Descri	ption of work order update	Initial	Ad	ction	Sign &		
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Equip/Tooling											
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Material]				~-	·	·				
Setup	<u> </u>										
Other											
Process	_										
Supplier											
Training											

Landing Gear General Pressure/Forced Grain Ovalized Bend Bending Temperature/Cure Centre Not Concentric to O/S BOM/Route Over/Under tolerance Hardware Broken/Damaged Inspection Incomplete Part Incorrect Weld Cracks Wrong Stock Pulled Crushed/Crimped. Instructions Incomplete/Unclear Part Lost/Missing Burrs Part Moved Maintenance Cuffs Contamination Positioned Wrong Mislabeled Countersink Heat Treat Other Power Loss/Surge Inspection Strip in Tube Cut Too Short Misread Drill Holes Offset Ripples in Bend Torque Waves in Extrusion Drawing Out of Calibration Out of Sequence Turning Sequence Finish Folio Outside Dimensions Wave/Twist in Tube

FAULT CATEGORY

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Unapproved

F

D

Item	Qty -241	Part Number	Description					
1	Х	D350-748-241	CROSSTUBE ASSEMBLY (AS 350/355 HI AFT)					
2	1	D6015-125	CROSSTUBE (OR D6018-125)					
3	2	D3502-1	SUPPORT					
4 .	2	D2856-400-710	ABRASION STRIP					
5	1	AELS-1032-225	INSERT					
6	1	NAS1149D0363J	WASHER (OR AN960JD10)					
7	2	MS21920-20	CLAMP (PER DART SPEC. M-MS21920-20)					
8	1	MS27039-1-10	SCREW					

GENERAL NOTES:

1) MATERIAL: MANUFACTURED FROM D6015-125 OR D6018-125 FINISHED LENGTH = 122,700±0.06

2) FINISH: MAGNETIC PARTICLE INSPECT PER DART QSI 038 4.2 CADMIUM PLATE PER AMS-QQ-P-416B, CLASS 1, TYPE II PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2 PAINT OUTSIDE PER DART QSI 005 4.2

3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.

UNITS: INCHES UNLESS OTHERWISE NOTED.

BREAK SHARP EDGES: 0.005 TO 0.010 MAX

IDENTIFICATION: DART PART NUMBER "D350-748-241" AND BATCH NUMBER ON INSIDE OF CUFF PER DART QSI 044 6.4 (VIBRATING STYLUS)

WEIGHT: 29.85 lbs

PART IS SYMMETRIC ABOUT CENTERLINE, EXCEPT FOR Ø0.297 HOLE.

RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT ALL EDGES FROM MACHINING LONGITUDINALY, TRANSITION SHOULD BE SMOOTH. NOTE: ALL HOLES ARE DRILLED AFTER BENDING.

10) BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.

11) HEAT TREAT TO MIN. 180 KSI PER MIL-T-6736 OR AMS 2759-1C AFTER TURNING. ACCEPTABLE TO VERIFY TENSILE STRENGTH BY HARDNESS TEST PER ASTM E18 TO 40-45 HRC.

12) INSTALL D2856-400-710 ABRASION STRIPS WITH A GAP ON BOTTOM SIDE OF CROSSTUBE. CENTERED OPPOSITE D3502-1 SUPPORT, PER QSI 035.

13) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES. NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO CRACKING/CHIPPING/GROOVES.

14) TORQUE CLAMPS 60 TO 80 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING INSAFETY AND THAT

NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

15) MAX TWIST AFTER BENDING: WITH XTUBE LAYED FLAT ON SURFACE, THE DIFFERENCE BETWEEN CUFF HEIGHTS FROM THE SURFACE MAY BE NO LARGER THAN 0.25 (ZN C1-3).

SHOD GODA RELIGINAL ENGINEER UNCONTROX SUBJECT TO ANATORS WITHING WORK ON 74 ML3
NO. 9.0674 09-21

UNDER REVIEW 12/9/18 9

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C



DRAWN	ap ap	HAWKESBURY, ONTARIO, CANADA				
DESIGN	97	DART AEROSP	ACF.	TD		
REV.		BY	DATE			
Α	NEW ISSUE		CP	06.03.31		
В	ADD D6018-125 & PF	RIME AND PAINT	CP	06.06.30		
С	ADD CAD PLATING		CP	06.08.14		
D	MAG. PARTICLE ANI	D CAD PLATE AS MFD.	CP	06.10.31		
E	REVISE GENERAL N STANDARDS; RELC (ZN A8-3); ADD TOL	RF	09.09.30			
F	TWIST LIMIT (A8-1, C	FION (B8-1) PER PAR 09-040, ADD C1-3), ADD D6015-125 OPTION NOW MACHINED (D1-4)	СР	10.11.23		

CHECKED DRAWING NO REV. F MFG. APPR. D350-748-241 SHEET 1 OF 4 APPROVED TITLE SCALE DE APPR. CROSSTUBE:(AS 350/355 HI AFT) NTS COPYRIGHT © 2006 BY DART AEROSPACE LTD 10.11.23

26

Chicago william white

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	Crack	5			Broken/Damaged		-1	ion Incomplete		Part Incorre	ct	Weld
	Crush	ed/Crimped	l,		Burrs	L	Instruct	ions Incomplete/	'Unclear	Part Lost/M	issing	Wrong Stock Pulled
	Cuffs				Contamination		Mainte	nance		Part Moved		
	Heat ⁻	reat			Countersink		Mislabe	led		Positioned V	Wrong	
	Inspec	tion Strip in	n Tube		Cut Too Short		Misreac	t		Power Loss/	'Surge	Other

Offset

Out of Calibration

Out of Sequence

Outside Dimensions

Drill Holes

Drawing

Finish

Folio

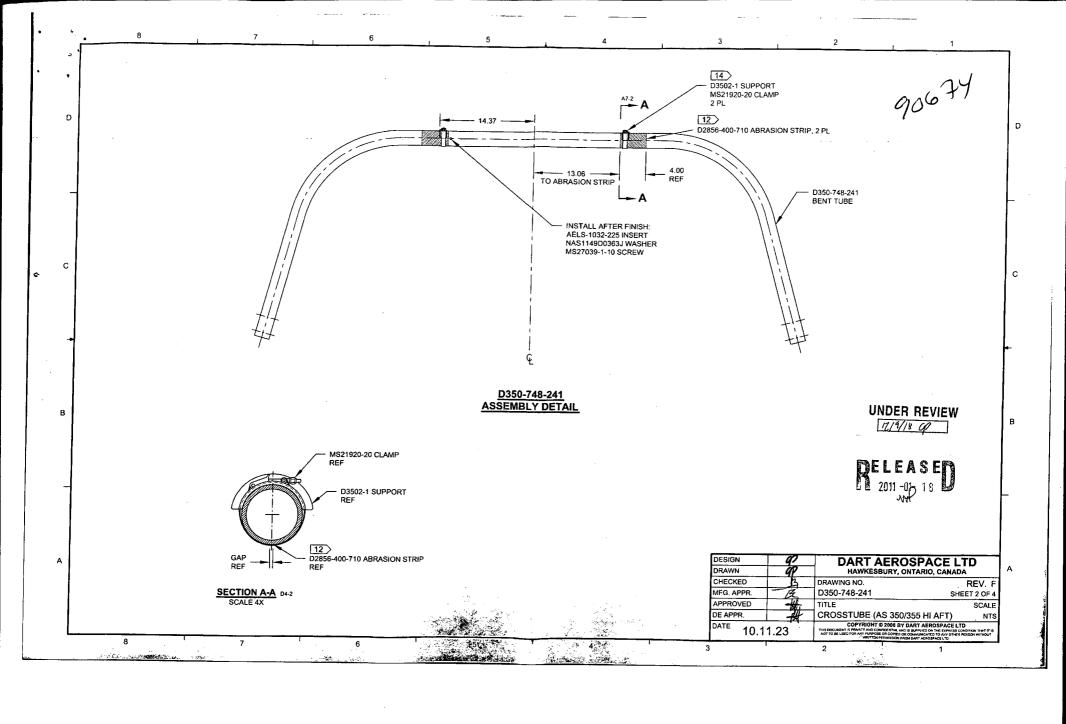
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Ripples in Bend

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion



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	Ripples in	Bend			Drill Holes	Offset					

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

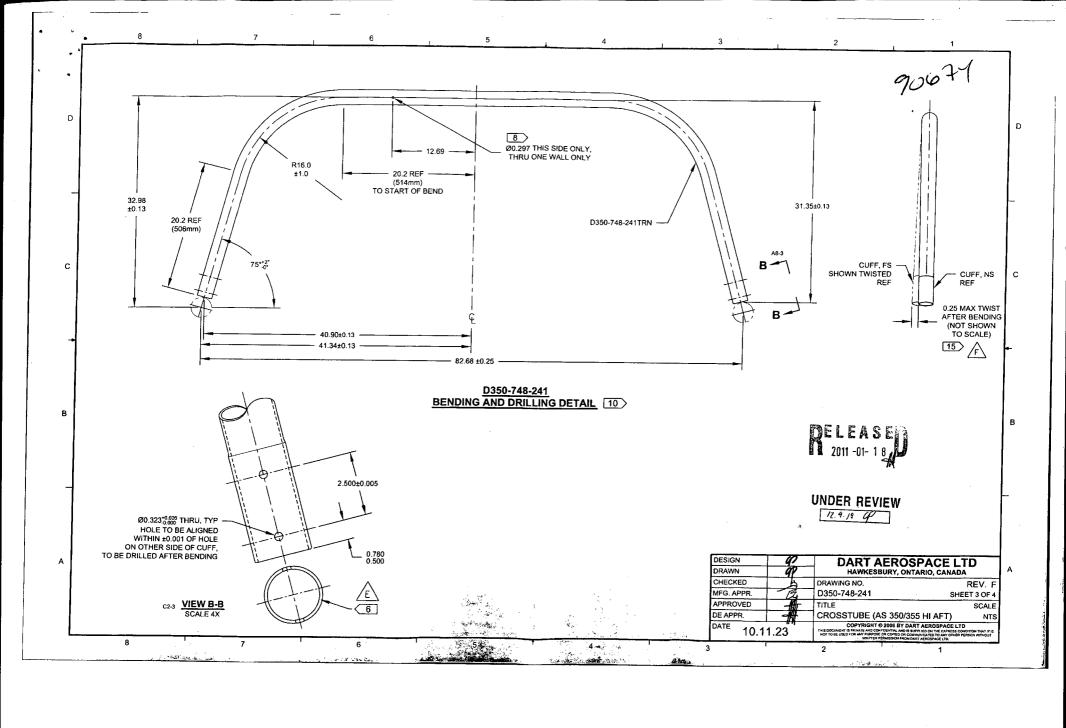
Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

Folio



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Hardware

Maintenance

Out of Calibration
Out of Sequence

Outside Dimensions

Mislabeled

Misread

Offset

Inspection Incomplete

Instructions Incomplete/Unclear

Temperature/Cure

Wrong Stock Pulled

Weld

Other

Over/Under tolerance

Part Incorrect

Part Moved

Part Lost/Missing

Positioned Wrong

Power Loss/Surge

BOM/Route

Contamination

Countersink

Cut Too Short

Drill Holes

Drawing

Finish Folio

Burrs

Broken/Damaged

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Ripples in Bend

Turning Sequence

Wave/Twist in Tube

Cracks

Cuffs

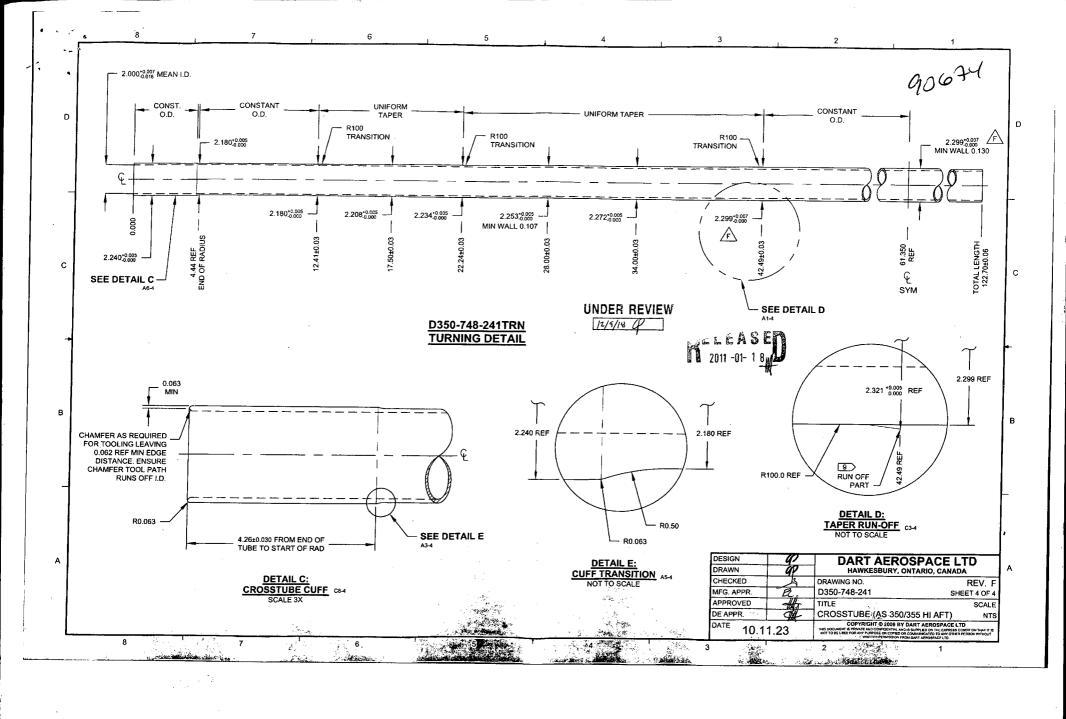
Heat Treat

Crushed/Crimped.

Inspection Strip in Tube

Torque Waves in Extrusion

Centre Not Concentric to O/S



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	Cracks				Broken/Damaged	——————————————————————————————————————	ection Incomple		 	Incorrect		Weld
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	Wave/Twist in Tube				Folio	Outsi	ide Dimensions	S				

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E. MERMAID LANE NYNDMOOR, PA 19038

Voice: Fax:

215-233-2600

215-233-5653

acking List Sales Order Number: 74295

Sales Order Date Oct 16, 2012

Page:

Sold To:

DART AEROSPACE 1270 ABERDEEN STREET HAWKESBURY, ON K6A 1K7 Ship To: DART AEROSPACE 1270 ABERDEEN STREET HAWKESBURY, ON K6A 1K7

Customer ID	5 0		
	PO Number	Payment Terms	
DARA	PO18083		
	Ship Via	Process	
	CALL CUSTOMER	HT	

Item	Description	T	
EACH	E350-748-141TRN CROSSTUBE HEAT TREAT TO MIN 180 KSI (MIL-T-6736 OR AMS 2759-1C) SANDBLAST TUBE AFTER HEAT TREAT 260 POUNDS TOTAL	I otal Shipped	This Shipment
CERT.			-
	EACH CERT.	EACH E350-748-141TRN CROSSTUBE HEAT TREAT TO MIN 180 KSI (MIL-T-6736 OR AMS 2759-1C) SANDBLAST TUBE AFTER HEAT TREAT 260 POUNDS TOTAL	EACH E350-748-141TRN CROSSTUBE HEAT TREAT TO MIN 180 KSI (MIL-T-6736 OR AMS 2759-1C) SANDBLAST TUBE AFTER HEAT TREAT 260 POUNDS TOTAL CERT.

COMMENTS

SHIPPED BY, SIGNATURE **METLAB**

DATE

RECEIVED BY, SIGNATURE DART AEROSPACE

DATE



Certification

SOLD TO

Dart Aerospace Ltd. 1270 Aberdeen Street Hawkesbury, ON K6A 1K7

November 13, 2012

Metlab Shop Order No:

74295

Purchase Order:

P018083

Description:

Crosstube

Part No.:

E350-748-141TRN

Quantity:

16 Pieces

Weight:

260 Pounds

Material:

4130 Alloy Steel

Specifications:

Heat Treat to Minimum 180 KSI (MIL-T-6736 OR AMS 2759-1C).

Sandblast tube after heat treat.

This is to certify that the above parts were processed as indicated above and conform to the specification requirements.

Results:

Hardness: HRC 40-42 (180-192 ksi converted)

METLAB ____

Quality Representative

MERCURY CONTAMINATION: During the heat treating process, testing and inspections, the product did not come in direct contact with mercury or any of its compounds nor with any mercury containing device.



D 350 X-TUBE CUFF MEASURMENTS AFTER HEAT TREATING

1	TYPE	BATCH#	SIDE A	SIDE B
		- Paris	TWO READINGS	TWO READINGS
1	AFT	90671	2.251"/20238"	2.238"/2.243"
2	AFT	90670	2.235"/2.247"	2.236"/2.250"
3	AFT	90675	2.220"/2.261"	2.235"/2.257"
4	AFT	90672	2.239"/2.264"	2.240"/2.242"
5	AFT	90676	2.238"/2.240"	2.247"/2.254"
6	AFT	90674	2.238"/2.245"	2.242"/2.258"
7	AFT	90688	2.239"/2.251"	2.238"/2.247"
8	AFT	90677	2.242"/2.247"	2.238"/2.256"
9	AFT			·
10	AFT			
11				
12	FWD	84664	2.234"/2.249"	2.209"/2.274"
13	FWD	86273	2.227"/2.261"	2.195"/2.258"
14	FWD	84665	2.239"/2.245"	2.214"/2.276"
15	FWD	84654	2.210"/2.275"	2.246"/2.249"
16	FWD	84661	2.246"/2.254"	2.193"/2.287"
17	FWD	84663	2.212"/2.272"	2.247"/2.252"
18	FWD	86272	2.266"/2.212"	2.243"/2.253"
19	FWD	84662	2.209"/2.269"	2.242"/2.254"
20	FWD			
21	FWD			
22	FWD			
23	FWD			